

Web Usability Basics

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Topics to Be Covered

- Why should you care about usability?
- Definitions
- Examples “everyday” usability problems
- Method for designing a usable web site
- Usability Checklist
- Examples



Why Should You Care About Usability?

- Have you ever...
 - gotten lost in a Web site?
 - left a site without finding the information you wanted?
 - waited too long for a page to download?
 - gone to a site you can't view or read?
 - visited a site with outdated information?
- Do you want people to visit and return to your site?



Why Should You Care?

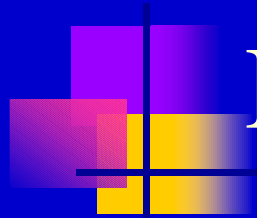
Research by User Interface Engineering, Inc., shows that people cannot find the information they seek on Web sites about 60% of the time. This can lead to wasted time, reduced productivity, increased frustration, and loss of repeat visits and money.



Why Should You Care?

Jakob Nielsen reports:

"Studies of user behavior on the Web find a low tolerance for difficult designs or slow sites. People don't want to wait. And they don't want to learn how to use a home page. There's no such thing as a training class or a manual for a Web site. People have to be able to grasp the functioning of the site immediately after scanning the home page — for a few seconds at most."



Definitions

Usability is the measure of the quality of a user's experience when interacting with a product or system — whether a Web site, a software application, mobile technology, or any user-operated device.



Definitions (cont.)

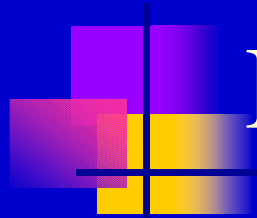
Usability is a combination of factors that affect the user's experience with the product or system, including:

- Ease of learning
 - How fast can a user who has never seen the user interface before learn it sufficiently well to accomplish basic tasks?
- Efficiency of use
 - Once an experienced user has learned to use the system, how fast can he or she accomplish tasks?



Definitions (cont.)

- Memorability
 - If a user has used the system before, can he or she remember enough to use it effectively the next time or does the user have to start over again learning everything?
- Error frequency and severity
 - How often do users make errors while using the system, how serious are these errors, and how do users recover from these errors?
- Subjective satisfaction
 - How much does the user like using the system?



Definitions (cont.)

Usability Engineering is a methodical "engineering" approach to user interface design and evaluation involving practical, systematic approaches to developing requirements, analyzing a usability problem, developing proposed solutions, and testing those solutions.



Types of Usability Problems

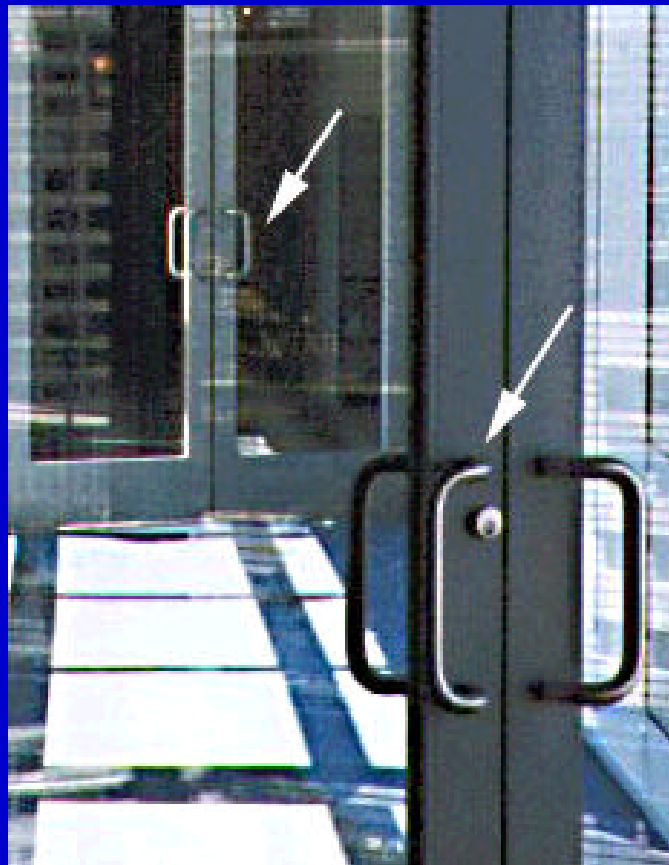
- Product doesn't match job or task
- Poor organization/layout
- Unexpected occurrence of events
- Product not self-evident
- Requires recall rather than recognition
- Inconsistent screens, messages, terminology
- Design is inefficient
- Cluttered or unattractive design
- No feedback or poor feedback about status or errors
- No exit or undo
- Help or documentation is not helpful



Usability of Everyday Objects

- Examples from <http://www.baddesigns.com>
- Further Reading:
 - Donald Norman: The Design (Psychology) of Everyday Things

Usability Problem Example: Inconsistent



Usability Problem Example: Poor Organization/Layout



Usability Problem Example: Product Not Self-evident



Usability Problem Example: Unexpected Occurrence of Events



Usability Problem : CFC sign





What is Usability?

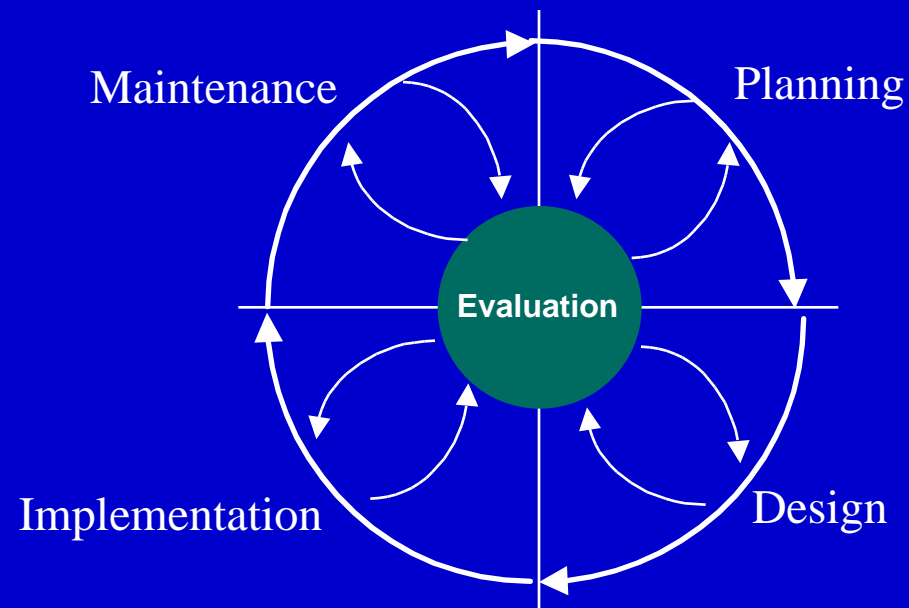
- Spectrum
 - Not “Is your site usable”, but “How usable is your site?”
 - Can set minimum standards to meet (time, error rate, user satisfaction)

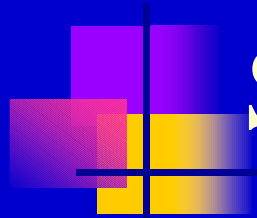


What is Usability?

- Not just about colors
 - Right functionality
 - Right task flow
 - “Look and feel”
- Not “Rocket Science”
 - Taking the user’s perspective
 - Knowing what users need, not just what they say they want
 - No one solution for all situations, but some general guidelines available (“It Depends!”)

A Method for Designing Usable Web Sites





Step One: Planning

“You can use an eraser on the drafting table or a sledge hammer on the construction site.”

- Frank Lloyd Wright



Planning: Activities

- Planning activities:
 - Define the purpose of the Web site
 - Identify target users
 - Get to know your users
 - Define the users' tasks
 - Determine scope, usage and change characteristics of the information
 - Define the “personality” of your site
 - Put together your Web site team



Planning: Define the Purpose

- Look at goals of your organization.
- Which goals is the Web suited to meet?
- Prioritize the goals for your site.
 - Have one primary goal.
 - Optionally have secondary goals.
- Example goals:
 - Provide a positive image of NASA / your organization
 - Provide information/function that the user needs



Planning: Identify Target Users

- While “anyone” can come to your site, determine who you want to target.
- Who currently comes to your site?
- Will targeting these people help you to meet your goals?
- Prioritize your target users.



Get to know your users

- Talk to your users
- Observe your users
- Get feedback from your users
- Find out...
 - Who are your **users (characteristics)**
 - What do they do (**tasks**)
 - Current vs. desired
 - Critical vs. non-critical
 - User/task matrix
 - How do they do it (**Task Flow**)
 - Where do they do it (**environment**)



Planning: Knowing Your Users

- What are your users' characteristics?
 - Age, computer literacy, domain knowledge, access methods, browsers, work environments, handicaps, etc.
- Collect this information through
 - Surveys / Questionnaires
 - Visits to their environment



Planning: User Tasks

- Why will users come to your site?
 - What's in it for them?
 - Best way to find out is to talk to them!
 - Create use scenarios to drive your design.
- Example user tasks:
 - Find information about a particular product
 - Learn about newest projects
 - Find out about future presentations
 - Download copy of a document
 - Contact organization employees
 - Provide feedback



Planning: Example Scenario

- ✿ Scenarios try to capture a moment in time for the user. A sample scenario might read:
 - John Doe is working at the IRS struggling to make their systems more usable. He remembers that someone at Goddard is involved with usability engineering and wants to contact that person, either by phone or email, for more information on doing usability engineering at a government agency.



Planning: Scope of Information

- Determine scope of the information:
 - What information do you need to provide to meet both your user's needs and your needs?
 - What is the best way to organize this information?
 - Use card sorting
 - Prioritize items within categories



Planning: Card Sorting

- Put one piece of information for your site on each index card.
- Have each person (user) sort them into groups.
 - They work independently and in silence.
 - They can duplicate a card if they think it belongs in more than one group.
 - They can add cards if they think information is missing.
 - There are no “wrong” answers.
- Have them name the groups.



Planning: Information Organization

- Consider the reader's needs when organizing information.
 - Have them organize it for you.
- Provide easily understandable labels for each category of information.
 - Have users make the labels.
- Where possible, use familiar organization schemes.



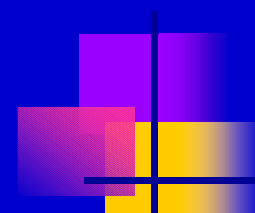
Planning: Usage and Change

- Determine usage and change characteristics of the information:
 - How will the information be used?
 - How often will it change?
 - Who will update the information?
 - How will you insure that it is updated?



Planning: Personality

- What do you want the “personality” or “mood” of your site to be?
 - List adjectives to describe your site:
 - e.g., fun, informative, efficient, accurate, trustworthy, up-to-date, authoritarian...
 - Ask your target users to do the same.
 - See if there is overlap :-).
 - This will drive design, especially graphics.



Site geared toward adults
www.whitehouse.gov



The White House
President George W. Bush

[President](#) [News & Policies](#) [Vice President](#) [History & Tours](#) [First Lady](#) [Search](#)
 Oval Office West Wing VP Office Blue Room East Wing Library

[Your Government](#) [Kids Only](#) [Español](#) [Contact](#) [Privacy Policy](#) [Site Map](#)

West Wing connections

Policies in Focus

- Overview
- Education
- Tax Relief
- Defense
- Social Security
- Medicare
- Faith-Based & Community
- En Español

News

- Current News
- Press Briefings
- Proclamations
- Nominations
- Radio Addresses
- Discurso Radial

Appointments

- Application

Major Speeches

- Presidential Address 10-7
- Joint Session 9-20
- National Day of Prayer 9-14
- Joint Session 2-27
- Inaugural 1-20

Photos



- Photo Essays
- An American Response
- Standing for the Flag

Today at the White House Oct. 13, 2001

Radio Address of the President to the Nation

"Good morning. This week, we opened some important new fronts in the war on terror. We're taking the war to the enemy and we are strengthening our defenses here at home." [Full Story](#) [En Español](#)

◀ Listen to the President's Remarks

President Asks American Children to Help Afghan Children

At a March of Dimes volunteer conference, President Bush said, "The people of Afghanistan have suffered too long under Taliban rule. That suffering provides us with a task. I'm asking every child in America to give... a dollar to a specific cause: a relief effort for the children of Afghanistan." [Full Story](#)

◀ View the President's Remarks

◀ Listen to the President's Remarks

President Holds Prime Time News Conference

"Good evening. I would like to report to the American people on the state of our war against terror, and then I'll be happy to take questions from the White House press corps." [Full Story](#)

◀ View the President's Remarks

◀ Listen to the President's Remarks

[▶ More White House News](#)



White House photo by Paul Morse

President George Bush addresses the nation in a prime time news conference.

Inside whitehouse.gov

President Establishes "America's Fund for Afghan Children"

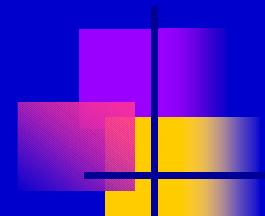
The President asks American children to help Afghan children by making contributions of one dollar individually or collectively to:

America's Fund for Afghan Children
c/o The White House
1600 Pennsylvania Ave.
Washington, DC 20509-1600

America Responds to Terrorism

The war on terrorism is being fought on diplomatic, military, financial and law enforcement fronts. Learn more about recent results of this multi-faceted operation.





Site geared toward children
www.whitehouse.gov/kids/

www.whitehousekids.gov

Test Only
Contact
White House

George W. Bush Laura Welch Bush Richard B. Cheney Lynne V. Cheney

Home > Kids Only

Welcome to  's web site for young Americans. Tour the  with  Learn  's White House  s. Test your history wits with  and meet some American dreamers with .


White House photo by Paul Morse
 **Spotty & Barney's Photo Album**

President Bush answers questions from students in the **Kids Connection**.



Favorites...    

meet...    

 Spotty's White House Tour
 Barney's White House ABCs
 Ofelia's American Dream Team
 India's History Quiz

President Bush's Kids Connection 

India's Quiz: What was Abraham Lincoln's occupation before he became President? 

 Teller
 Cook
 Poet
 Lawyer


 **Photo Album**
 Tee-ball pictures
 **Guide for Teachers & Parents**



 **Spotty**  **Barney**  **Ofelia**  **India**  **White House House**



Planning: Development Team

A cross-disciplinary team includes:

- Project manager (Web site manager)
- HTML Authors
- Programmers
- Interface and Interaction designer
- Graphic designer
- Human factors/ Usability expert
- Writers / Editors
- Content Owner(s)
- Client / customer
- User
- System/ server administrator
- Representative from a Legal department
- Security

Hey look, No Webmaster!



Planning: Challenges

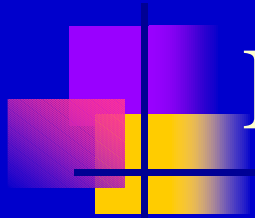
- Poorly defined and/or overlapping roles and responsibilities of team members
- Coming to consensus
- Irrelevant information (Feature Creep)
- Desire for “coolness”
- Adding features because you can, not because they enhance your site



Design

“Any object or element of the interface that does not add to communication is subtracting from it.”

-Bruce Tognazzini



Design: Issues

- Cross-platform design issues
- Browser differences
- The needs of authors as well as users
 - Authors update the information on the page.
 - Users read the information on the page.



Design: User Behaviors

- ✿ Typical Web user behaviors which have design implications:
 - Users do not always start at your home page.
 - Users may be interested in only a small part of your site.
 - Users scan before deciding whether to read the entire page.
 - Users find it harder to read text on-line.
 - Users care about their time.
 - Users don't want to spend unnecessary effort.
 - Users do get lost.
 - Users do appreciate pages that are pleasing.
 - Users do not have the same platform or the same browser.
 - Some users have text-based browsers.



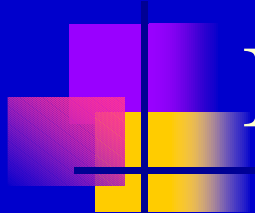
Design: Consider Accessibility

- It's the right thing to do.
- Providing choices benefits all.
- You don't know what set up your users have.
- It is the law!



Design

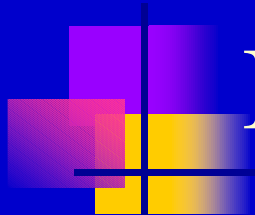
- Iterative process
- Apply guidelines and heuristics
- Paper prototypes -> Review with users
- On-line prototypes -> Review with users



Implementation

“The intelligent use of graphic elements and design can add greatly to the attractiveness of a web page. But it's like putting on makeup -- you have to know when to stop.”

-Zen and the Art of Web Design



Implementation

Follow Design Guidelines and Style Guides

Consider:

- Cross-platform issues
- Browser differences
- Accessibility issues



Implementation: Design Style Guide

✿ Create a design style guide:

- The guidelines for a consistent look and feel and site navigation experience.
- The key to success is making the details simple, understandable, and easy to implement.
- A style guide should include:
 - Overall navigation and organization
 - Templates for each “page type”
 - Guidelines for adding content
 - Guidelines for removing/archiving content
 - Presentation guidelines (e.g., color schemes)
 - Approval and workflow checklists



Implementation: Creating the Style Guide

How do you create a style guide?

- Start with a general, high-level style guide.
- Make it more specific to your project.
 - E.g., if high-level says “use a consistent font”, your project style guide would say which font to use.
- Make it easy to use.
- Allow it to evolve as your system evolves.



Implementation: Guidelines

✿ Guidelines

- are a way to make your site consistent.
- come from past experience and studies.
- are not hard and fast rules.
- can be changed when warranted.
- can be broken if you have a good reason to do so.

✿ Understand the reasons behind the guidelines and then you will know when you can deviate from them.



Evaluation

“If the user can’t find it, it isn’t there!”



Evaluation: Early and Often

- ✿ Evaluate your web site to verify that it meets your purpose and that your users can use it successfully.
- ✿ Evaluate early and often:
 - Conduct tests iteratively.
 - Do not work in isolation; start collecting feedback as soon as the structure is defined.
 - Do not wait for graphics to do testing.
 - Make it easy for people to give feedback.



Evaluation: Testing

Test:

- With different Web browsers.
- On different platforms.
- On different monitor sizes (13"-17", laptops), resolutions, and color bit-depth (256).
- With images turned off.
- At different connection speeds.
- At expected peak usage.



Evaluation: Usability Testing

✿ What is Usability Testing?

- A way to evaluate the interface with real users.
- Can be done in a lab or in their environment.
- Can be performed on paper prototypes as well as implemented systems.

■ How?

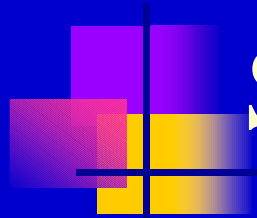
- Give users representative tasks to complete.
- Watch for where the interface does not support their task completion.
- Identify changes to be made to the interface to support the user.



Evaluation: Remote Testing

You don't need to get usability feedback from your users

- Often, a speakerphone is enough.
- If feasible, use software like look@me to see user's navigation behavior.
- Use on-line usability questionnaires.
- Offer selected users a sneak peak at your redesigned site and ask them for feedback.



Step Five: Maintenance

Your annual maintenance budget should be as big as the original development budget.



Maintenance: Site Management

- Update content as “promised”.
- Revise Web site based on feedback.
- Identify “new” content.
- Check Web site integrity.
- Monitor Web site usage statistics.
- Look at the terms people use to search for information at your Web site.
- Use site management tools for effective management of your Web site.



Maintenance: New Technology

- Continue learning about new Web technology.
- Evaluate technology for benefit it will provide to your site.
- But wait until new technology is stable and compatible with all browsers that your users use.



Usability Checklist

http://www.weinschenk.com/knowledge/thoughts/thoughts_apr98.asp

1. Are there 9 or fewer areas on the page for visitors to focus on, or are there too many areas on the screen competing for visitors' attention?
2. Are there 9 or fewer items in lists or groups, or if more than 9 are they broken up into categories, or do visitors have to scan long lists?



Checklist (cont.)

3. Can visitors read the text, or is a background color or texture interfering with the readability?
4. Does the layout of the screen encourage visitors to move their eye focus in a logical, orderly fashion, or are visitors visually lost?



Checklist (cont.)

5. Is the site designed with a particular target audience in mind, or is it trying to be all things to all people (and therefore nothing to nobody)?
6. Does the order visitors move through a page, or set of pages, match the way they want to do their work, or do visitors get lost trying to find information or fill out a form?



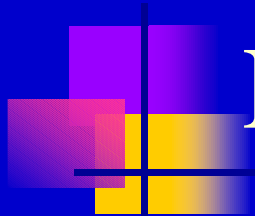
Checklist (cont.)

7. Do you have the most important information at the top, or do visitors have to scroll to get to anything of importance.
8. Do you have the right amount of layers - enough to organize the material well and reduce decision making, but not so many layers that it takes too many clicks to get to meaningful information.



Checklist (cont.)

9. Do you know the purpose of the site, or has the site grown appendages that don't hang together?
10. Have you chosen the best content type (text, graphics, audio...) for the material and the hardware and software environment of your target audience, or is your content presented inappropriately?



Examples

<http://omni.gsfc.nasa.gov/588/>

<http://www.odiniis.com/>

Code 588 OMNI Time and Attendance Homepage

User Services

Below are the user services available to all OMNI users. All pages have context sensitive help located at the bottom of the page.

- Change your [Password](#)
- Change your [Preferences](#)
- Check what the JON numbers and names mean at the [JON Information](#) page
- Check the [FWS schedules](#) for 588 personnel
- Update your [FWS](#)
- Submit your [Leave Slip](#)
- Fill out your [Timecard](#)

Administrative Services

Below are the administrative services available *only to OMNI administrators*. All pages have context sensitive help located at the bottom of the page.

- [Timekeeper Administration](#)
- [Employee Admin](#). Add,remove or modify an employee
- [JON Admin](#). Add, remove or modify JON information.
- Change the [Organizational Preferences](#).
- Change OMNI [Privileges](#).
- View or change [Passwords](#)
- Modify those [user preferences](#) that are administrative
- Print the End of the Fiscal Year [timecards](#)
- Print Blank [timecards](#)

Supervisory Services

Below are the supervisory services available *only to OMNI supervisors*. All pages have context sensitive help located at the bottom of the



ODIN

Outsourcing Desktop
Initiative for NASA



GODDARD SPACE FLIGHT CENTER



Photos: NASA 15 October 2001



Wireless Phone Seats Now Available!

MeetingMaker



Quicklinks

- [X.500 Lookup](#)
- [ODIN GSFC Site](#)
- [NASA Website](#)
- [ACS](#)

Customer Outreach

- [Call Customer Outreach](#)
- [Customer Satisfaction Survey](#)
- [InterChange Newsletter](#)
- [Metrics](#)
- [Customer Comments](#)
- [Upcoming Events](#)

Asset Management

- [ODIN Domestic Property Form \(PDF\)](#)
- [ODIN Foreign Property Form \(PDF\)](#)
- [Asset Insight \(External site\)](#)

System Refresh

System Refresh related topics.

- [Refresh Status](#)
- [Hardware Tech Refresh FAQs](#)
- [Systems Refresh Specifications](#)
- [Refresh Activities](#)
- [Quarter 10 Refresh Selections \(by Last Name--PDF 18.9 KB\)](#)
(Updated- 06-26-01)
- [Quarter 10 Refresh Selections \(by Org Code -- PDF 19 KB\)](#)
(Updated- 06-26-01)

H/W & S/W Reference

- Links to Hardware & Software related documentation:
- [REFERENCE](#)

Customer Support

Customer Support links:

- [IntelliCenter Helpdesk](#)
- [ODIN Ticket Status](#)
- [ODO database](#)
- [ODIN Catalog](#)
- [ODO Approval Representatives](#)
- [Seat Descriptions](#)
- [ODIN Security Alert](#)
- [VirusScan and Virex Data](#)
- [ODIN FAQs](#)
- [Supported Software\(Word Document 87.5 KB\)](#)
- [Supported Software Vendor Links](#)

Enterprise Services

All network support is found at the CNE website.

- [CNE](#)
- [ONE User's Group presentation \(PPT\)](#)

Desktop Services

There are no SW rollouts scheduled at this time.



ODIN

Outsourcing Desktop
Initiative for NASA



About
IntelliCenter's
New Interface

[Powerpoint Presentation](#)

There are now **three** methods available for reporting a problem to the IntelliCenter. You can call the IntelliCenter directly, you can submit a Remedy service request via a Remedy web form, you can submit the information via an email form. Please select one of the methods from the choices below:

IntelliCenter HelpDesk

1 Call the IntelliCenter HelpDesk at:

1-877-IIS-4YOU

1-877-447-4968

2 Submit a ticket

To submit a ticket please select your platform:

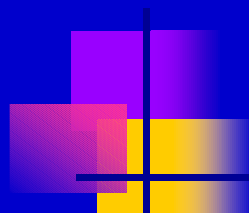
- [PC/Unix](#)
- [Mac](#)

Or
Submit your Ticket

3
by e-mail

To view the status of a ticket [all platforms](#) use the link below:





ARWeb> IntelliCenter

New ODIN Service Request Form [Help](#) [Logout](#)

Submit Reset Defaults

Please Note: Red field label indicates a Required Field. The Service Request cannot be submitted without this information.

1. Please Enter the ECN CPU # and press Enter.
(Fields below will be filled in for you. The "ECN #" is the tag number on the front of the unit.)

ECN CPU

2. Please verify the information about you.
(Please enter information in any of the empty fields)

First Name	Last Name	Phone
Reporter's Email Address		User ID
Building	Room	Org Code
		Site

3. If you are reporting this Service Request for someone else, please enter your information here.

Contact Name	Contact Phone	Contact's Email Address

4. Please enter detailed information about the Service Request:

OK to Work if Not There?

Summary (Brief Description)

Please enter a detailed description of the Service Request:
Please include all pertinent information including related error messages.

Description Text



Summary

✿ **Know Your Users!!**

- ✿ **Talk to them**
- ✿ **Get feedback from them**

- Have a goal or purpose for your site.
- Spend time in planning and design.
- Don't do things because you can, do them because they add value.
- Continually evaluate and update your site.



Conclusion

- Start somewhere
 - Plan to apply at least one of these techniques to your current and/or next project.
 - Identifying users and their tasks is most important



Usability Related Web Sites

- ✿ <http://usability.gsfc.nasa.gov>
 - ✿ Goddard Usability Engineering Center
- ✿ <http://www.usability.gov>
 - ✿ Usability resources by National Cancer Institute
- ✿ <http://www.uie.com>
 - ✿ User Interface Engineering (Jared Spool)
- ✿ [**http://www.UPAssoc.org**](http://www.UPAssoc.org)
 - ✿ The Usability Professionals' Association
- ✿ [**http://www.useit.com/alertbox**](http://www.useit.com/alertbox)
 - ✿ The Alertbox: Current Issues in Web Usability (Jakob Nielsen)
- ✿ [**http://nasa-wbp.larc.nasa.gov/**](http://nasa-wbp.larc.nasa.gov/)
 - ✿ NASA World Wide Web Best Practices



Online Web Design Style Guides and Guidelines

On-line web usability checklist

- http://www.weinschenk.com/tools/online_checklist.asp

✿ Yale C/AIM Web Style Guide

- <http://info.med.yale.edu/caim/manual/contents.html>

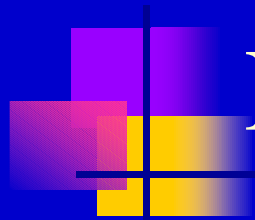
✿ IBM Web Design Guidelines

- http://www.ibm.com/ibm/hci/guidelines/web/web_design.html



Books on Usability

- The Design of Everyday Things by Donald Norman
- Usability Engineering by Jakob Nielsen
- The Usability Engineering Lifecycle by Deborah J. Mayhew
- Handbook of Usability Testing by Jeffrey Rubin
- Cost-Justifying Usability by Randolph Bias and Deborah Mayhew



Further Information

For more information or assistance contact :

Dana Uehling

Code 585 / Computing Environments &
Technology Branch

301-286-3375

dana.uehling@gsfc.nasa.gov